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Sumário

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Killing the Green goose: legal limits to develop and sell biodiversity goods*

Os limites jurídicos para desenvolver e vender produtos da biodiversidade

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Abstract

Biodiversity and its protection are at the centre of international environmental discussions. The legal regimes set by the Convention of Biological Diversity and the Nagoya Protocol, not yet in force, are aimed to foster the protection of biodiversity through legal distribution of rights and a regime focused on ecosystems, not singular species. However, the tension between economically efficient protection and distributive concerns, as well as a complex structure of entitlements, mitigates the use of market mechanisms to approach a sustainable use of biodiverse resources. This article proposes the evaluation of the conventional dispositions from an economic perspective, as well as the tensions between two predominant legitimating discourses. It concludes that the international legal regime in force is not enough to grant an efficient use of biodiverse resources, as well as an optimal standard of protection, since it limits the state capabilities to lay down more efficient statutes and implement liberal policies.

Keywords: Biodiversity. Convention on Biological Diversity. Nagoya Protocol. Genetic resources. Biodiverse resources.

Resumo

A biodiversidade e sua proteção estão no centro das discussões ambientais internacionais. Os regimes jurídicos postos pela Convenção da Diversidade Biológica e pelo Protocolo de Nagoya, este ainda sem vigor, têm o objetivo de fomentar a proteção da biodiversidade mediante a distribuição jurídica de direitos subjetivos e construção de um regime pautado pela noção de ecossistema, não de espécies isoladas. Não obstante, a tensão entre a proteção economicamente eficiente e preocupações distributivas, bem como a estrutura complexa das titularidades, mitigam o uso de mecanismos de mercado para abordar o uso sustentável de recursos biodiversos. Esse artigo propõe a avaliação de disposições convencionais a partir de um viés econômico, bem com das tensões entre os dois discursos predominantes de legitimação. Ele concluí que o regime jurídico internacional em vigor não é suficiente para garantir o uso eficiente dos recursos biodiversos, bom com um padrão ótimo de proteção, pois limita a capacidade estatal de estabelecer leis e regulamentes mais eficientes, bem como implementar políticas mais liberais.

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Palavras-chave: Biodiversidade. Convenção da Diversidade Biológica. Protocolo de Nagoya. Recursos genéticos. Recursos biodiversos.

1. Introduction

A strong and sound market for genetic resources and related goods generates strong incentives to biodiversity conservation. Nevertheless, the legal regime laid down by the Convention on Biological Diversity (CBD) looks to bar the widespread use of such assets and, consequently, of many possible socio-environmental benefits. At least partially, the negative incentive to the employment of biodiverse inputs is the result of unclear norms on access to resources, its ownership and downstream limits to use of such assets.

In 2010 during the COP-10, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity was adopted and was implemented on October 12th of 2014.[1]

This article discusses the legal aspects related to the economics of biodiversity and genetic resources. It focuses the limits of ownership rights implemented by the domestic law and its evaluation from the point of view of two disputing discourses: one oriented by sovereign developmental goals and other oriented to the maximization of environmental protection.

2. The objectives and principles of the CBD

The CBD was signed on June 5th, 1992, and came into force on December 29th, 1993. By the adhesion of Andorra in May 20015, the figure of 196 Members was reached. The Convention was preceded by the creation by the United Nations Environmental Program in 1987 of a Committee, which consisted of a working group to study the implementation of an umbrella convention to bring together all the existing treaties related to the issue.

The negotiation process was polarized in three lines of tension: between developed and developing countries, between transition (ex-communist) and developed countries, and between transition and developing countries. A main point put forward by these states was the need to grant special conditions to their further development, since both developed and transition countries historically depleted their ecosystems in order to grow. In economic terms, it puts the question of an *efficient and sustainable use* of natural resources – biodiversity included – as necessarily limited by *distributive effects* in terms of rights to pollute and exploit non-renewable and renewable resources to developing countries. As generally perceived, the fair distribution of wealth could be Pareto inferior in terms of conservation, as far as benefits to developing countries are granted in a higher degree.

Therefore, some economic instruments devoted to correct inequalities have been put on the table and, as a consequence, the final text contemplates both the conservation of biodiversity as far as the economic gains of countries that have conserved their own biodiversity.

Accordingly to the negotiated concessions, the CBD Article 1 identifies two finalities: (a) the biodiversity conservation, and (b) the sustainable use and fair and equitable share of benefits from the genetic resources. Transfer of technology, funding and appropriate access, and *inter alia*, are instruments to implement fairness and equitability to the genetic resource benefit sharing[2].

Considering the whole convention, Lakshman Guruswamy organizes it around three structuring principles: equity and resource transfers, conservation and sustainable use, and common but distinct responsibility. Although they are not the only principles that could be correctly extracted from the CBD text, they are very revealing of the unsolved tension between developed and developing countries. The third principle links "equity and sustainable development together"[3], as if words would be enough to conciliate efficiency and distributive goals. Consequently, it is legitimate to ask if that is enough.

The analysis of economic aspects of conservation and of the fair and equitable share of the benefits is

1 In 2016 the Nagoya Protocol has 69 Parties. (CDB Secretariat).

2 Nagoya Protocol Article 1 - "[t]he objective of this Protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components".

3 GURUSWAMI, Lakshman D. *International Environmental Law in a Nutshell*. 2. ed. Eagan: Thomson-West, 2003.

fundamental to understand the incomplete conciliation of CDB's objectives.

3. Biodiversity as a public good

CBD's Preamble recognizes the "intrinsic value of biological diversity". However, its definitions (Article 2) and operative clauses are far away from any ecocentric doctrine, as well as any moral commitment to other species. As Birnie and Boyle point out:

> The Preamble's first recital begins by recognizing, without further explanation, 'the intrinsic value of biodiversity', as well as other values – ecological, genetic, social, economic, scientific, educational, cultural, recreational, and esthetic. […] The other Preambular recitals refer to biodiversity, however, solely as a 'resource'. The substantive articles define 'biological resources' as including 'genetic resources, organisms or parts thereof, populations or any other biotic component ecosystems *with actual or potential use or value to humanity*', a more anthropocentric approach. The preamble reinforces this in noting that conservational use of biodiversity is critical for meeting the food, health, and other needs of the growing population.[4]

Nevertheless, the shyer and shallower approach of earlier conventions was clearly replaced by an integrated view of ecosystems, instead of singular species or resources, as the unit to be conserved.

In fact, former conventions on the protection of species focus on economically useful animals or plants and propose regimes that control exploitation, such as hunting seasons and limited quotas[5]. The depletions faced were result of overexploitation, not systemic crisis. Considering the interest to protect stocks as the primary goal of such treaties, it is not hard to understand the substantial change brought by an approach that took whole ecosystems into account: as the exclusive goods resulting from harvesting were replaced by the nature itself, a complex public good – the biodiversity – occupies now the centre of the stage.

In other words, the CBD does not protect directly the interests of people entitled to harvest or to exploit the natural resources. It does protect the whole humankind – since biodiversity is defined as "a common concern". So, *the notion of a collective or public good explains better the focus of the CDB than the doctrines of intrinsic value.* This is not a statement without consequence though, since the acceptance of the biodiversity value as being economic implies, necessarily, a less than absolute character. As far as it is accepted as holding a relative value, the biodiversity can, legitimately, be exchanged for other goods.

Since biodiversity is legally defined as a public good, whose beneficiary is the whole humankind, its depletion or diminishment, although in favour of any economic actor, represents a decrease of utility to all other people. So, in order to understand how to protect biodiversity, it is necessary to understand the reasons of its former destruction as well as the market mechanisms that can help to conserve it.

4. Economics of biodiversity

Depletion of biodiversity might result from a wide variety of causes. To summarize, two usual sets will be remembered: (a) on one hand, Jared Diamond's expression "quartet of evil", referring to habitat destruction, overkill, introduced species, and secondary extensions[6]; (b) on the other hand, Edward Wilson's accrnym HIPPO, referring to habitat destruction, invasive species, pollution, population, and over harvesting.[7]

Gerd Winter follows a report from the German Advisory Council on Global Change (GACGC) (2001) in adopting a syndromic view of the environmental issues, which considers systemic dynamics that identifies the human economic activities and its effects on the environment.[8] The document describes sixteen syndromes and six environmental problems. The identification of these

4 BIRNIE, Patricia W.; BOYLE, Alan E. *International Law and the Environment*. Oxford: Oxford University Press, 2002. p. 573

5 For example: Migratory Bird Treaty Act of 1918; International Convention for the Regulation of Whaling (ICRW), Washington, 1946; Convention on Wetlands of International Importance, especially as Waterfowl Habitat, Ramsar, 1971; Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973; Convention on the Conservation of Migratory Species of Wild Animals, (CMS), Bonn, 1979; Convention of the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, Nairobi, 1985.

6 DIAMOND, J. M. "Normal" extinctions of isolated populations. In: NITECKI, M. H. (Ed.). *Extinctions*. Chicago: University of Chicago Press, 1984. p. 191-246.

7 WILSON, Edward O. *The Future of Life*. New York: Knopf, 2002.

8 WINTER, Gerd. Introduction, In: WINTER, G. (Ed.). *Multilevel Governance of Global*: Environmental Change. Cambridge: Cambridge University Press, 2006.

questions follows the criterion that they are predominately geographic but also regards the complexity of causes and effects to identify the following clusters: climate change, ozone depletion, oceans at risk, biodiversity loss and deforestation, soil degradation, and freshwater. It is interesting to stress that even though biodiversity is nominally referred only to forest, it is obvious that oceanic and freshwater species are also included in the broad concept. Moreover, all of the 16 syndromes affect biological diversity and, within them, 14 strongly affect it.[9]

Syndromic GACGC analysis also classifies them in three broad categories

1. *'Utilisation' syndromes:* Syndromes as a consequence of inappropriate utilization of natural resources as factors of production;

2. *'Development' syndromes:* Human/environment problems resulting from non-sustainable development processes;

3. *'Sink' syndromes:* Environmental degradation due to inappropriate disposal of the effluents of human society.[10]

These categories are linked to three distinct economic situations, which also embrace Diamond's and Wilson's sets of environmental issues:

1. One or a limited set of living elements of an ecosystem is highly valuable and, therefore, it is exploited in rates higher than the natural reposition ones (utilisation syndromes, overkill, overharvesting);

2. Land, water, or any other mineral resources are economically valuable and the natural ecosystem represents a barrier to their complete use (developmental syndromes, habitat destruction, deforestation, population, secondary extensions); and

3. Externalities, such as pollution and invasive species, occur due to the lack of manifest preferences to conserve the ecosystems and their sites (sink syndromes, pollution).

The first item refers to the overexploitation problem, usually approached through the concept of tragedy of commons. This expression, popularized by a Garrett Hardin's essay to Science, refers itself to a situation in which a resource is exploited by more than a single individual or organization and, as a result of the selfish seeks for higher revenue; the use of the resource extrapolates an optimal rate.[11] Generally, there are two possible solutions: privatisation and regulation. Enclosure and privatisation lead to a better utilisation of the resource, since the owners are interested in obtaining the best possible revenues, which are expected to result from the self-interest in maximizing wealth. Regulatory solutions depend on the external intervention of the state – as well as any other political entity – to distribute the shares and to control the respect of the established rules. Self-regulatory and cooperative structures, such as traditional division of labour as well as wealth and communitarian management, both approximate the solution to privatisation and regulation, since, on one hand, the socio-political arrangements create a collective actor who is able to seek optimal results; on the other hand, regulatory structures are committed to the group, and the management costs are supported by the own community.

Nevertheless, the approach to overexploitation, through the tragedy of the commons concept, does not cover the whole issue of biodiversity. The good protected by both privatizing and regulation solutions is not necessarily the biodiversity itself, but the optimal use of a natural resource, which almost always is not an entire ecosystem, but an element that can be individualized, captured, and incorporated to the economic human life. In other words, it can be useful to protect alligators, whose skin is a valuable asset to produce purses and shoes, but it cannot protect the natural niche of the species from its mass production in farms, far more efficient in getting financial revenues.

As a consequence, solutions to overexploitation problems cannot be regarded as a panacea to biodiversity protection, especially considering the integrated ecosystemic approach. Therefore, it is a very valuable instrument to take care of single species as well as biomes that cannot be easily farmed, both due to natural and

9 GERMAN ADVISORY COUNCIL ON GLOBAL CHANGE. *New Structures for Global Environmental Policy*. London: Earthscan, 2001. Available in: <http://www.wbgu.de/wbgu_jg2000_engl.pdf>. Consulted on: 16 july 2015. WINTER, Gerd. Introduction. In: WINTER, G. (Ed.). *Multilevel Governance of Global Environmental Change*. Cambridge: Cambridge University Press, 2006.

10 GERMAN ADVISORY COUNCIL ON GLOBAL CHANGE. *New Structures for Global Environmental Policy*. London: Earthscan, 2001. Available in: <http://www.wbgu.de/wbgu_jg2000_engl.pdf>. Consulted on: 16 July 2015.

11 HARDIN, Garrett. The tragedy of commons, In: *Science*, n. 167. 1967. Available in: <http://www.sciencemag.org/cgi/reprint/162/3859/1243.pdf>. Consulted on: 16 July 2008.

regulatory hardships, such as high seas and protected areas, respectively.

The second economic situation deals differently with biodiversity, especially regarding the destruction of biomes in order to open new agricultural areas. If in some regions the deforestation has slowed down in recent years[12], it is still increasing in some other regions such as South-East Asia.[13] Indeed, biodiversity is a function of space occupied by ecosystems; therefore, the reduction of areas that are natural habitats of many species, implies the *in situ* destruction of those species.

The very wide scope covered by the definition of biodiversity as a "common concern of humankind" that extends itself to future generations does not help to find people and groups immediately interested in its conservation. As a pure public good, it is not provided under market conditions, since preferences do not get revealed.

The classical available solution is a commanding and controlling one. The lack of a global state-like authority implies the absence of international public policies, taxes, and enforcers, though. Therefore, CBD follows the pattern of creating conventional obligations to states, which would be responsible for the protection of ecosystems in their territories and for the cooperation to conserve biodiversity of global commons. Nevertheless, operative clauses are very loose, full of evasive formulations such as 'as far as possible', and 'as appropriate'.

The protection of biodiversity is, as a consequence, formally in the sole hands of the states. Sometimes, though not every time, states, which are the only entities that actually hold all necessary features to set and implement public policies, have specific economic or political interests in protecting natural areas and biodiversity. Moreover, if the benefits resulting from the public good supply are higher than the gains of any alternative use plus the implementation costs, the efforts of the organized civil society and the business sectors may be able to produce awareness as well as specific actions devoted to the environmental conservation.

The third situation is very close to the second one. The same public good – biodiversity – is at stake, the reason for the failure in offering it is not the same, though. Waste disposal, pollution, and invasive species, which can be regarded as a special kind of pollution, are economic effects of the human activity that are usually kept outside the accountancy of productive and consumptive processes or, in short, externalities.

If, on one hand, the menace to biodiversity due to a more intense economic use of the land often depends on private ownership of this resource, the externalities normally affect public goods, commons, or relatively pulverized sets of exclusive private goods. Indeed, the property rights induce their owners to protect the goods and to resist the negative effects from external activities as far as their costs are lower than the damages generated. In the condition of absence or a high fragmentation of the ownership (commons, pulverised property), public policies are necessary to deal with the problem.

To solve the externality problem, it is possible to foster the diminishment of the costs of internalization, or to enforce a command and control policy. For instance, special credit lines to acquisition of anti-pollution filters is an action that makes easier to the polluter to cut down the negative effects of his or her activity. Alternatively, contracting more inspectors to help the enforcement of legal penalties can lead to the same results. In the presence of two or more methods, a good manager shall choose a better mix in terms of costs and benefits. Since the problem of externalities admits inductive instruments as possible solutions, it does not necessarily demand any kind of international state to enforce policies and public decisions.

Nevertheless, since legal and social distribution of property is an important variable, it is also possible to increase the social pushes towards the control of externalities through the assignment of property rights. The clear attribution of ownership rights over biodiversity is, therefore, a very strong instrument to mitigate negative externalities.

It does not mean that such property rights should necessarily be attributed to private owners. It is, of cour-

12 "Recent efforts have reduced Amazon deforestation in 2013 by 70% below the historical 1996–2005 baseline of 19,600 km2 per year. Deforestation in the Cerrado has remained high. Deforestation has steadily declined in the Atlantic Forest despite a slight increase in 2013. " UNITED NATIONS. Secretariat of the Convention on Biological Diversity. *Global Biodiversity Outlook 4*. Montréal: Secretariat of the Convention on Biological Diversity, 2014. p. 53. Available in: <www.cbd.int/GBO4>. Consulted on: 16 Jan. 2016.

13 UNITED NATIONS. Secretariat of the Convention on Biological Diversity. *Global Biodiversity Outlook 4*. Montréal: Secretariat of the Convention on Biological Diversity 2014. p. 52. Available in: <www.cbd.int/GBO4>. Consulted on: 16 Jan. 2016.

se, a possible solution, as well as the state ownership. Moreover, through the strengthening of cooperative ties among pulverized owners, it is possible to unify the action. Cooperatives, federations of indigenous people, and governmental action towards the empowerment of local communities are good examples of coordinated and cooperative instruments to unify interests and action. A multiple owner, such as scattered group of peasants, can become a single entitled entity, such as a cooperative, that is far more able to identify and to fight those negative effects over their properties.

As far as biodiversity, or any of its aspects, is marketable, the interest of their owners can converge to its protection; therefore, some benefits thereof shall be exclusive.

As it has been discussed in the former topic, biodiversity is treated by the CBD as a public good that, at least in some aspects, is a pure one. Since it is well known, a pure public good cannot be exclusively appropriated due to its own characteristics or to the high costs of exclusivity. It is possible, moreover, that the legal system prohibits the private appropriation of some goods, which turn in legally colective. Nevertheless, the CBD did not lay down that all biodiversity and its aspects are *legally* public and, as a consequence, it can be appropriated by private or public entities. This interpretation is corroborated by the Preamble, which expressly recognises a wide set of value: "ecological, genetic, social, economic, scientific, educational, cultural, recreational, and aesthetic". Some of these values only have some sense if the goods are exclusive.

So, the CDB admits that biodiversity can be economically valuable – the so-called resources. As a resource, biodiversity (species, materials, and ecosystems) may generate sustainable economic activity, such as services and trade. For instance, ecotourism, voluntary donations to keep natural areas untouched, and traditional and indigenous handcraft trade, *inter alia*, are generally regarded as activities that foster the conservation of natural sites and biodiversity. The use of genetic resources is a particular case of it.

Summarizing, three economic problems affect the biodiversity: overexploitation of natural resources, need for land and other natural resources, and externalities. The dynamics of both overexploitation and externality problems can be, in some extension, dealt with ownership assignments as well as actions to increase the value of consistent products to conserve the biodiversity. If the value of land or other resource is higher than the value of the resource based on the biodiversity, the only solution is the regulation. In other words, market instruments are not effective to prevent depletion of ecosystems unless some effective economic values result from it and they are not overwhelmed by the revenues from other uses of land and other resources.

The meaning of genetic resources as well as the dynamics of its marketability is important to understand the effects of access regulation and the share of benefits over protection and conservation of biodiversity.

5. Genetic resources as economic goods

The CBD is the first document that makes clear that access to genetic resources is not free but it is under the state sovereignty. As Article 15 (1) states, "the authority to determine access to genetic resources rests on the national governments and is subject to national legislation", and a mutually agreed price is to be paid for the access. The prior informed is the key to validate the contractual terms of access.

CBD, Article 2, defines some important expressions as follows:

> "*Biological resources*" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.
>
> […]
>
> "*Genetic material*" means any material of plant, animal, microbial or other origin containing functional units of heredity.
>
> "*Genetic resources*" means genetic material of actual or potential value.

These definitions clearly set that genetic resources are material, tangible goods. The technical and scientific descriptions as well as the intellectual property (IP) rights derived thereof are no genetic resource.

Interpreting the definition of genetic material in an extensive manner, every material extracted from biological resources whose DNA was not destructed, also encompasses genetic material. Timber, fish, and a myriad of plants and animals normally sold as commodities, would be under restrictions of access applied to biotechnological research or *ex situ* breeding. The defi-

nition of "utilization of genetic resources" was firmly embedded in the Nagoya Protocol. According to the article "Utilization of genetic resources", it is necessary to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the use of biotechnology as defined in Article 2 of the Convention;"[14]

Such interpretation is to be kept away not only because its effects are dysfunctional, but because it is wrong. In fact, the concept of "genetic resources" cannot be equalized to "biological resources" one, since it would be nonsense to define two synonymous concepts in the same text through the use of equivalent terms. In fact, genetic resource is genetic material that is potentially and actually valuable as such, that means, "functional units of heredity" which can be used to the reproduction of specimens as well as to the synthetic production of proteins or other substances.

So, there are just a few situations, mainly related to endangered species, in which the access to genetic resources could, under special circumstances, imply overexploitation. Since the access is limited to samples, a high price of the genetic resources would hardly derive from its scarcity. The price of the samples would account nothing but the costs of sample operations plus the payment of the local material holders. This situation seems to be unfair to at least some important negotiating parties of CBD, especially to the underdeveloped countries backed by a developmental discourse.[15]

From this material perspective, genetic resources are very close to immaterial goods, since its use to breeding or to synthesizing is not rivalrous. It means, plainly, that the use of a genetic resource does not exclude others from the use of an equivalent genetic resource to the same specific finalities.

In fact, there is an important market on genetic material from animals that held very special characteristics, such as awarded bulls, which does not depend on special regulation to exist, since, in fact, the good at state has its production limited by the material condition of a small group of animals. It is to be clearly distinguished from the breeding or cropping of certain species, whose genetic material could be, indistinctly, sampled through the access to any of its representative individuals. Attributing any special value to such genetic resources, depends on the creation and entitlement of property rights in a fashion very close to the IP rights.

The most common argument to justify IP rights is based on the dynamics of invention and production. This argument defends the need of exclusive rights that derives from creation or invention and, consequently, is an incentive to further research and artistic activities. The social and legal creation of an ownership system that encompasses immaterial objects is a necessary condition to implement a market and, in the specific case of IP rights, is clearly aimed to it. [16]

In fact, genetic resources are material; however, as it has been pointed out, they are not necessarily scarce in consequence of their materiality. They are due to the fact that the information contained a DNA chemical support – or any functional unit of heredity – that can be used in the *ex situ* breeding of plants and animals or, otherwise, through biotechnological devices. Therefore, the original set of individuals or parts thereof can be multiplied and perpetuated without any need for further samples. Consequently, it gets clear that legal entitlement to exclusive rights over genetic resources through the regulation of the access is aimed to create scarcity and, consequently, a market for the access itself.

So, it is important to understand the motives and justifications for the creation of such property system.

6. Two discourses: right to development and efficient conservation of biodiversity

At least two popular discourses are articulated in order to justify the CBD clauses that restrict access. On one hand, the *discourse of right to development* stands the well known narrative of structural unbalance between North and South and the need to bridge the development gap. The use of genetic material from Southern

14 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity, adopted at the CBD COP-10 on 29 October 2010. Available in: <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>.

15 See BIRNIE, Patricia W.; BOYLE, Alan E. *International Law and the Environment*. Oxford: Oxford University Press, 2002; GURUSWAMI, Lakshman D. *International Environmental Law in a Nutshell*. 2. ed. Eagan: Thomson-West, 2003.

16 PICCIOTTO, Sol; CAMPBELL, David. Whose molecule is it anyway?: private and social perspectives on intellectual property. In: HUDSON, Alistair (Ed.). *New perspectives on property law, obligations and restitution*. London: Routledge-Cavendish, 2003.

territories would be a kind of colonial exploitation and a historical debt should be paid by industrialised countries. On the other hand, the *discourse of efficient conservation of biodiversity* states that the fair and equitable share of benefits is primarily aimed to incentive developing countries to conserve their biodiversity, since they can perceive it as a future source of revenues.

The discourse of the right to development is built on the foundations set by a sharp structural division between developed and developing countries. In its more radical version, both the colonial and the free trade international systems are regarded as tools that widen the developmental gap, since they favour the central economies – mainly the US – and eternilise the backwardness of the third world. North-South relations are primarily conflictive and the objectives of developing countries are to conquer rights and benefits in order to increase their power in the international arena until they equalise or surpass the power of developed countries. The notion of fairness defended by its discourse focus on the retributive justice as well as the historical debts accumulated during the colonial period; also, the biodiversity is an additional instrument to reach the objectives of increasing the national wealth and, consequently, power.

Therefore, the notion of "fair and equitable share of benefits", following this discourse, cannot be established by the market once the necessary fairness includes a compensatory dimension established by the retributive patterns of justice. The own market is primarily seen as an instrument of international oppression and dominance by the North over the South and any increased interdependence means, essentially, more dependence.

Conversely, the discourse of efficient conservation of biodiversity presupposes that the CBD was signed to protect biological diversity. Consequently, the instruments thereby adopted aim primarily the environmental protection. Therefore, it sets forth that, though states are members of international organisations and responsible for their acts, biodiversity is a public good, the relevant stakeholders are all individuals encompassed by the concept of "common concern of humankind"[17], and indigenous and local communities.

This perspective displaces states from the centre of the discussion; therefore, the North-South conflict becomes the greatest concern therewith. Since the individuals and the communities are stakeholders, the development itself is assessed by their living standards and perceptions, and cannot be strongly equalized to the growth of the state wealth anymore. It is necessary to stress that perception and discourse are not exclusive of the biodiversity or of the environmental fields, but they are increasingly influent in international documents and norms, such as the Millennium Development Goals as well as the conditionalities of international financing institutions.

The "fairness and equity" hold another in this discourse.[18] At first, the regard is far more prospective, since there is no need to compensate former colonial inequalities; future generations are the beneficiaries. The focus is on sharing of benefits: individuals and communities are generally entitled to more biodiversity and, in the case of individuals and communities, to revenues from use and commercialization of genetic resources and related IP rights. It is in the market that genetic resources and downstream products are traded. Consequently, the values of genetic resources are set in market transactions and cannot be artificially higher. Regarding such condition, the fair and equitable share of benefits has a very clear limit: the profitability of the final products.

Nevertheless, an effective use associated to a fair share of benefits assures no protection to biodiversity. It depends on a feedback effect--stakeholders that are entitled to receive the revenues from the use of genetic resources and products resulting from them shall:

1. Regard the exploitation of biodiversity as more profitable than rival uses of the resource (agriculture, for instance), as it was described as the situation 2 of the economics of biodiversity; and

2. Hold enough rights and/or power to bar the rival uses of the resource.

17 See KISS, Alexandre-Charles. *La notion de patrimoine commun de l'humanité*. Boston: Brill, 1982. (Collected Courses of the Hague Academy of International Law. The Hague Academy of International Law, v. 175).

18 The article 5.1 of the Nagoya Protocol recognized " […] benefits arising from the utilization of genetic resources as well as subsequent applications and commercialization shall be shared in a fair and equitable way with the Party providing such resources that is the country of origin of such resources or a Party that has acquired the genetic resources in accordance with the Convention. Such sharing shall be upon mutually agreed terms." Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity, adopted at the CBD COP-10 on 29 October 2010. Available in https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf

If any of these conditions are absent, there is no reason, according to the conservationist discourse, to implement and to enforce any property rights over genetic resources.

Although several distributions of ownership rights can be built, as it is to be discussed below, the CBD solution was to concentrate these rights in the sovereign entity. To justify it from the point of view of the conservationist discourse, it is possible to argue that the power of states is, generally, enough to implement conservation programs (2nd condition) and it would be possible to identify it as a better actor to have concentrated therein, the rights over biodiversity.

Therefore, it is possible to assert that those discourses may converge to the point that assures it is correct to attribute rights over genetic resources to the state of origin. The Nagoya Protocol explicitly specifies in its article 6 that:

In the exercise of sovereign rights over natural resources, and subject to domestic access and benefit-sharing legislation or regulatory requirements, access to genetic resources for their utilization shall be subject to the prior informed consent of the Party providing such resources that is the country of origin of such resources or a Party that has acquired the genetic resources in accordance with the Convention, unless otherwise determined by that Party.[19]

Nevertheless, the harmony between them cannot be expected to be resilient.

The following table summarizes the main features of both discourses:

Table 1 – Developmental and conservational discourses.

	Developmental	**Conservational**
Primary actors	States.	Stakeholders. Individuals and local communities.
Biodiversity	Mean.	End.
Political assumptions	North-South structural conflict Focus on power.	Generalization of consensus and attention to non-state goals. Focus on wealth and environment.
Main principle	Sovereignty.	Biodiversity as common concern of humankind.
Market	Widens the developmental gap. Instrument of oppression.	Instrument to set and distribute the values of biodiversity and genetic resources.
Fairness and equity	Compensation for the colonial inequalities. Retributive justice.	Fair distribution among stakeholders. Seek for efficient empowerment and legal entitlement. Distributive justice.
Development	National growth. New international balance of wealth and power.	Sustainable development.

Moreover, it is necessary to stress that sometimes some elements of the conservational discourse are incorporated by the developmental one in two important ways: the internal empowerment and affirmation of individuals and communities as decision makers on one hand, and the incorporation of international conservation and developmental goals to government policies, on the other.

In fact, the radical distinction between the focus on primary actors as stakeholders and as states can be mitigated by a wider acceptance of sub-national actors, governmental or from the civil society, as internal decision makers. Nevertheless, since the developmental discourse takes the presupposed structural distinction between developed and developing states as the fundamental feature of international relations, the participation of sub-national actors are accepted as long as they support state policies. In other words, the discursive *loci* of anti-imperialism, needs to revert the balance of power, the retributive justice against colonial powers/corpora-

19 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity, adopted at the CBD COP-10 on 29 October 2010. Available in: < https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>.

tions, the sovereign rights over natural resources, and the biodiversity. In order to increase national wealth and power, they are used as a criterion to screen the relevant and non-relevant internal actors, since the discursive legitimacy of political objectives as well as civil society actors shall pass the compatibility test to the general view. State discourses, such as the traditional developmental one, focus the national public entities and government capabilities, competences, and responsibilities to set and control the aims of both international and internal policies.

Regarding the conservational and developmental goals, the classical structural/developmental discourse tends to focus the growth of national wealth and the increase of national capabilities to produce technology. The welfare is a result from growth, closely related urbanization, industrialization, and focus the innovation and research. However, the theorists do not agree on distributive policies that vary according to leftist and rightist political tendencies[20]. At this point, it is necessary to highlight that developmental goals, as defined in some recent international documents that follow the criterion of UN Millennium Goals, are closer to distributional and welfare concerns than to classical structural/developmental conceptions and beliefs. This last discourse, therefore, perceives environment and welfare concerns as secondary and instrumental.

Since the backwardness of developing countries' economies is attributed to the unbalanced structure of political and economic relations between North and South, and the state is the primary actor both in international and internal arenas, the participation of sub-national actors as well as the use of international environmental and developmental criteria cannot be regarded as more than merely instrumental discursive *loci* that are temporarily incorporated in the narrow limits of its convenience. In fact, there is no easy reconciliation between the analysed discourses.

Nevertheless, they get to a common point regarding the genetic resources: they shall be object of an ownership system that creates or increases their value. The reasons, however, are quite distinct. For one reason, the entitlement of the state to exert control over the access is a historically conquered right that shall be used to make developing Southern states more wealthy and powerful in relative, not absolute, terms. For the other one, only effective results in terms of biodiversity conservation justify the concentration in the hands of the states' exclusive right to authorize the access.

These distinct fundamentals lead to different structures of the ownership. Thus, the analysis of the general structure of the right to allow or deny access to genetic goods in the system of the CBD is, also, a necessary step to understand the influence of each of these discourses and their effects over the conservation of biodiversity.

7. Exclusive control of access as a property right

The CBD sets some internationally agreed characteristics of this ownership system and left the further development of a most specific regulation to the Conference of Parties (COP) as well as, predominantly, to the states' internal legal systems. The main aspects dealt with in the CBD are the entitlement of rights over genetic resources and some necessary steps to its legitimate transfer as well as some suggested means of returning to the access conceivably allowed.

Indeed, property is the exclusive right to possess, enjoy, and dispose a good. It means that a person, which can be an individual or a legal entity, is the owner. Consequently, the right to exclude all other subjects from the possession and enjoyment of such good is owned. A legal description of a property right is to comprise, consequently, the subject (owner), the rights derived from the ownership (possession, enjoyment and disposal), and the means to protect and to exert these rights. The same structure can be employed to explain the exclusive right to control access to natural resources.

The owners of genetic resources are, primarily, the states. Following the legal institute of permanent sovereignty over natural resources, reaffirmed in the CBD, Article 15 (1), the genetic resources' owner is the state where they are found. Therefore, the state can legally establish a system to regulate the access.

The access to genetic resources shall be preceded by a prior informed consent, which means that any *in situ* research, sampling, or any other mean of access to a

20 BIELSCHOWSKY, Ricardo. *Pensamento Econômico Brasileiro – 1930/1964*: o ciclo ideológico do desenvolvimento. 3. ed. Rio de Janeiro: Contraponto, 1996.

genetic resource cannot be considered legitimate unless the one who carries it has been authorized in the terms of state legislation and by the competent authorities. According to Nagoya Protocol (article 6), the competent national authority, which comprehends multilevel governments and, occasionally, indigenous and local communities, consents the access during a reasonable period of time in a certain geographic area through specific procedures and to a specific use, which cannot be changed or transferred to third parties without a new consent.

Additionally, the further use and benefits of the genetic resources are to be mutually established between the parties in an access agreement. As it has been pointed out above, the consent to the access does not imply the permission to use associated knowledge or commercialization.

The mutually agreed terms are the instrument in which the balance among the several aspects of access and the use of genetic resources are to be established between – or among – the state and the other stakeholders. The Nagoya Protocol was intended to:

> Establish clear rules and procedures for requiring and establishing mutually agreed terms. Such terms shall be set out in writing and may include, *inter alia*:
>
> (i) A dispute settlement clause;
>
> (ii) Terms on benefit-sharing, including in relation to intellectual property
>
> rights;
>
> (iii) Terms on subsequent third-party use, if any; and
>
> (iv) Terms on changes of intent, where applicable.[21]

The fair and equitable share of benefits may embrace both financial and non financial aspects. It may vary from the plain exchange of samples for a price – a sale contract – to complex relational regimes that encompass both monetary and non monetary obligations for each part. For instance: a price (monetary obligation) can be established for a certain period of access time to a determined area for the sample collecting to a determined range of species (obligation to permit the access) with the help of local guides (accessory services) that will be technologically processed in foreign laboratories with the presence of technicians and researchers of the country of origin (accessory services, building capacity), being clearly agreed that the IP rights resulting from the research are to be shared in a determined proportion (obligation to perform common registry), and royalties are to be paid for downstream uses of the resources (obligation to pay royalties). It is not difficult to imagine some far more complex regimes. The Nagoya Protocol detail a wide set of 10 suggested monetary, and 17 non-monetary benefits (Annex). All these lists are open.[22]

An important question that arises from the access legal structure of the genetic resources is the nature of the knowledge use restrictions and the IP rights that derive from them. It is generally recognized that once the ownership over a material good resource is transferred, the related rights to possession, enjoyment, and disposal are transferred therewith. The modern structure of property rights, for the sake of certainty and transparency, is normally concentrated in a single owner and regimes of co-property are exceptional. It would be reasonable to believe that it is also the case with the rights and the products at the downstream of a sold genetic resource.

Indeed, the co-property of downstream rights, knowledge, and products extends the problem of anti-commons far beyond the access regulation. The transaction and enforcement costs will be very high and, possibly, many economic operations will become non viable.

At first sight, the notions of informed consent and the mutually agreed terms would exclude the transference to third parties and the use of the knowledge or intellectual property rights that result, in any sense, from a genetic resource; *unless* they are clearly established in those terms.[23] The mere access authorization would not

21 Article 6. 3 (g) in Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity, adopted at the CBD COP-10 on 29 October 2010. Available in: <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>.

22 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity, adopted at the CBD COP-10 on 29 October 2010. Available in: <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>

23 "Recognising that access and benefit-sharing rarely take place between one provider and one user, but that more often it applies to a chain of providers and users, terms on subsequent third party use are suggested".(GLOWKA, Lyle; NORMAND, Valérie. The Nagoya Protocol on access and benefit -sharing: innovations in international environmental law. MORGERA, Elisa; BUCK, Matthias; TSIOUMANI, Elsa. The 2010 Nagoya Protocol on access and

include the downstream[24] uses *unless* they were clearly described therein. The Nagoya Protocol provided in the article 6 Access to genetic resources that

> […] 3. Pursuant to paragraph 1 above, each Party requiring prior informed consent shall take the necessary legislative, administrative or policy measures, as appropriate, to:
>
> […]
>
> (g) Establish clear rules and procedures for requiring and establishing mutually agreed terms. Such terms shall be set out in writing and may include, inter alia:
>
> […] (iii) Terms on subsequent third-party use, if any; and[25]

This is a possible interpretation, corroborated by the Nagoya Protocol, of the notion of fair and equitable share of benefits. However, it shall not be used to construct a concept of co-property of the genetic resources, according to which the country of origin would keep the right to prohibit further uses of the genetic resources as if the state had kept the enjoyment right, or a part thereof. It is far more reasonable to focus on possible compensatory rights that result from the rule of fair and equitable share of benefits, which basis could be any malicious behaviour that biases the consent and the agreed terms, as well as a use that could not be predicted in the time when the terms were negotiated.

8. Final Conclusions

The CBD was the result of a compromise between countries primarily concerned about the conservation of biodiversity through restrictions, the control of human activities that would deplete ecosystems, and the countries in which the use of available natural resources can be profitable. Since a consensus was not possible, the solution to harmonize the opposed interests was the establishment of instruments to motivate and to compensate the costs of conservation. The recognition of the permanent sovereignty over the genetic resources was an important part of this solution, which, at first sight, would contemplate both the developmental and the conservational discourses.

The definition of the biodiversity as a "common concern of humankind" as well as the character of public good that derives from its intrinsic value established legal foundations to the building of an international system. Nevertheless, a legal definition is not enough to implement an effective regime: the protection and conservation depends on the comprehension of the economic dynamics of the uses of the biodiversity as well as the resources associated to it. As it has been described, increasing the market value of biodiversity and products related to it – such as ecotourism and exploration of genetic resources – is a central incentive to the conservation.

Genetic resources, therefore, are a possible source of revenue to states and local stakeholders. The recognition by the CBD of a sovereign right over such assets, which are functionally equivalent to property rights, was intended to increase their value through monopolistic control or oligopolies.

The justifications for the increase of exclusivity of genetic resources, however, come from two distinct legitimating discourses. On one hand, a developmental one, which focus on the structural differences between Northern and Southern states and consider the sovereignty over genetic resources as an instrument of compensation from colonial exploitation. On the other hand, a conservational discourse, which considers that the primary aim of CBD is the conservation of the biodiversity and the rights over genetic resources, is an instrument thereof. The social articulation and the market circulation of wealth are instruments to increase incentives to conserve natural areas.

Specific regimes of property over genetic resources are heavily affected by the discursive basis. The search for legitimacy in one of both discourses deeply influences the design of the ownership rights, especially in the domestic sphere, the most influent over the access control. Regimes conceived under the influence of development are more likely to overrate the values of genetic resources. Consequently, it is possible that no market transactions related to genetic resources occur due to

benefit-sharing in perspective. Netherlands, 2013. pp 33)

24 "Downstream" activities include research (basic and applied) and development on genetic resources for both commercial and non-commercial purposes – i.e. activities that fall within the Protocol's definition of "utilization" of genetic resources – and the commercialization of products that are based on the utilisation of genetic resources or associated traditional knowledge". (IEEP, Ecologic and GHK. Study to analyse legal and economic aspects of implementing the Nagoya Protocol on ABS in the European Union. Executive Summary of the Final report for the European Commission, DG Environment. Institute for European Environmental Policy, Brussels and London, 2012.)

25 Nagoya Protocol

the high transaction costs and anti-commons situation.

A market of genetic resources is beneficial for all parties, since it is an incentive to the development of technology, a source of revenue for states, enterprises, and local stakeholders. It is, of course, necessary to grant the fair and equitable share of benefits, but with no market, there are far less benefits to be shared. Therefore, it is necessary to shape the ownership regimes carefully.

Both international and domestic legal principles as well as rules shall be designed in order to deny the extension of the ownership rights beyond a reasonable reach, implemented by an efficient control of access, and having transparent mutually agreed terms. The CBD system, which confers to the states the sovereign control over the genetic resources in their territories, is flexible enough to embed a very wide range of international and domestic regimes. Some sorts of these regulatory frameworks happen to be risky to the own existence of a market on genetic resources and their downstream products; therefore, they may jeopardize the own positive effects of the biodiversity conservation, killing the rare green goose that was supposed to lay the golden eggs.

References

BIELSCHOWSKY, Ricardo. *Pensamento Econômico Brasileiro – 1930/1964*: o ciclo ideológico do desenvolvimento. 3. ed. Rio de Janeiro: Contraponto, 1996.

BIRNIE, Patricia W.; BOYLE, Alan E. *International Law and the Environment*. Oxford: Oxford University Press, 2002.

CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY. *Report of the Conference of the Parties to the Convention on Biological Diversity on the work of its Ninth Meeting*. Bonn: UNEP/CBD/COP/9. 2008

DIAMOND, J. M. "Normal" extinctions of isolated populations. In: NITECKI, M. H. (Ed.). *Extinctions*. Chicago: University of Chicago Press, 1984. p. 191-246.

GERMAN ADVISORY COUNCIL ON GLOBAL CHANGE (2001) *New Structures for Global Environmental Policy*. London: Earthscan. Available in: <http://www.wbgu.de/wbgu_jg2000_engl.pdf>. Consulted on: 16 July 2008.

GLOWKA, Lyle; NORMAND, Valérie. The Nagoya Protocol on access and benefit -sharing: innovations in international environmental law. In: MORGERA, Elisa; BUCK, Matthias; TSIOUMANI, Elsa. *The 2010 Nagoya Protocol on access and benefit-sharing in perspective*. Netherlands, 2013. p. 33.

GURUSWAMI, Lakshman D. *International Environmental Law in a Nutshell*. 2. ed. Eagan: Thomson-West, 2003.

HARDIN, Garrett. The tragedy of commons. *Science*, n. 167. 1967. Available in: <http://www.sciencemag.org/cgi/reprint/162/3859/1243.pdf>. Consulted on: 16 july 2008..

HELLER, Michael A. The tragedy of the anticommons: property in the transition from marx to markets. *Harvard Law Review*, n. 111, p. 621-688, 1998.

KISS, Alexandre-Charles. *La notion de patrimoine commun de l'humanité*. Boston: Brill, 1982. (Collected Courses of the Hague Academy of International Law. The Hague Academy of International Law, v. 175).

PICCIOTTO, Sol; CAMPBELL, David. Whose molecule is it anyway?: private and social perspectives on intellectual property. In: HUDSON, Alistair (Ed.). *New perspectives on property law, obligations and restitution*. London: Routledge-Cavendish, 2003.

SAFRIN, Sabrina. Hyperownership in a time of biotechnological promise: the international conflict to control the building blocks of life. *American Journal of Intrenational Law*, n. 98, p. 641-685, 2004.

SCHRJIVER, Nico. *Sovereignty over Natural Resources*: Balancing Rights and Duties. Cambridge: Cambridge University Press, 1997.

UNITED NATIONS. Secretariat of the Convention on Biological Diversity. *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization*. Montreal: Secretariat of the Convention on Biological Diversity, 2002.

WILSON, Edward O. *The Future of Life*. New York: Knopf, 2002.

WINTER, Gerd. Introduction. In: _____. (Ed.). *Multilevel Governance of Global Environmental Change*. Cambridge: Cambridge University Press, 2006.

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